



Original communication

Suicides in adolescence: A twelve-year study from Eastern Turkey

Hüseyin Kafadar ^{b,*}, Safiye Kafadar ^{a,1}, Mehmet Tokdemir ^b^a Harput State Hospital, 23000 Elazığ, Turkey^b Firat University, Department of Forensic Medicine, 23110 Elazığ, Turkey

ARTICLE INFO

Article history:

Received 19 February 2014

Received in revised form

17 May 2014

Accepted 17 July 2014

Available online 25 July 2014

Keywords:

Suicide

Suicide attempts

Adolescent

ABSTRACT

Suicide is a form of behavior brought about by a combination of biological, psychological, and social factors and the adverse effects of those factors on individuals, their surroundings, society, and subsequent generations. In this study, attention is focused on the increase in adolescent suicides in Elazığ and the surrounding province.

The probable suicide cases among adolescent deaths that occurred in Eastern Turkey between 2001 and 2012 were examined retrospectively. A total of 67 cases were evaluated in terms of age, sex, method of death, death location, and the time of the year at which death occurred.

Of the 67 study cases, 40 were female (59.70%) and 27 were male (40.29%). When the methods of suicide were analyzed, it was found that hanging came in first place with 34 cases (50.74%), followed by death using a firearm with 27 cases (40.29%). Other types of death were self-poisoning in four cases (5.97%) and jumping from a height in two cases (2.98%).

According to this study, there are common risk factors both for suicidal thoughts and suicide attempts. Defining the prevalence of suicidal thoughts leading to suicide attempts, determining the risk factors, and evaluating the relationship between those factors and mental disorders will enable society to develop new approaches to suicidal behavior.

© 2014 Elsevier Ltd and Faculty of Forensic and Legal Medicine. All rights reserved.

1. Introduction

Durkheim defined suicide as “all cases of death resulting directly or indirectly from a positive or negative act of the victim himself, which he knows will produce death.”¹

The act of suicide is a complicated process, from the intrusion of suicidal thoughts through planning and finally executing the suicide attempt.^{2–4} Suicide arises from the interaction of biological, psychological, and social factors.^{4,5} Moreover, socioeconomic and psychological problems can stimulate the idea of suicide. The methods by which people commit suicide differ from one society to another.⁶ It has been observed that children cannot comprehend the concept of death before reaching a certain age and suicide rates tend to increase with the onset of puberty.^{3,4,7} Suicide-related deaths rank third among the top ten causes of death worldwide.^{7,8} According to the World Health Organization's definition, adolescent suicides comprise deaths occurring between the ages of fifteen and nineteen; suicide is the second biggest cause of death in that age group.⁹

Suicide attempts during adolescence are seen as moderately prevalent compared to those in other age groups.¹⁰ It is known that suicide attempts are more common in women, while the act of committing suicide is more common in men.^{11–14} However, in socioeconomically underdeveloped countries and regions, suicide rates are higher in adolescent girls and women than in men.^{15–17}

When exploring the tendency to suicide, it is important to evaluate mental disorders and how they interrelate with socio-demographic factors. This will ultimately help us understand and prevent suicidal behavior.⁴

Every age group is exposed to different psychological problems and ways to solve them. Understanding those problems is a vital element in the prevention of suicide, and preventative measures should be prioritized in today's society. Thus, the aim of this study is to shed light on the increase in adolescent suicides, analyze the factors involved in those suicides, and implement measures to prevent them in the future.

2. Materials and methods

The probable suicide cases among adolescent deaths that occurred between 2001 and 2012 were examined retrospectively and archived in the Elazığ Forensic Medicine Directorate. A total of

* Corresponding author. Firat University, Department of Forensic Medicine, Medical Faculty, 23110 Elazığ, Turkey. Tel.: +90 0506 9091166.

E-mail addresses: kafadar23@yahoo.com, dr.hkafadar@gmail.com (H. Kafadar), safiye.kafadar@gmail.com (S. Kafadar).

¹ Tel.: +90 0506 9091177.

67 cases were evaluated in terms of age, sex, method of death, death location, and the time of the year at which death occurred.

3. Results

Of the 67 study cases, 40 cases were female (59.70%) and 27 were male (40.29%) (Table 1). When the methods of suicide were analyzed, it was found that hanging came in first place with 34 cases (50.74%), followed by death using a firearm with 27 cases (40.29%). Other types of death were self poisoning in four cases (5.97%) and jumping from a height in two cases (2.98%) (see Table 2). The location of the incident was at home in 59 cases, in the garden of the home in six cases, and by jumping off high in two cases. Spring was the most common season for suicides while March was the most common month. A suicide note was left in only seven cases.

Of the suicides that occurred due to firearm injuries, 15 were female and 12 were male, while 14 (51.85%) victims were injured in the head region, six (22.2%) in the chest region and seven (25.92%) in the abdominal region (see Fig. 1).

When the suicide cases were evaluated in terms of age, it was found that eight of them were 15 years of age, eleven were 16 years of age, seventeen were 17 years of age, and fifteen were 19 years of age. No alcohol or other common drugs were determined in the toxicological investigations.

In this study, there were psychiatric disorders in six cases, school failure in five cases and drug abuse in two case.

4. Discussion

One of the study's aims was to define the many risk factors based on age and gender that play a role in the prevalence of suicide and suicide attempts. It was reported that completed suicides occur most commonly in subjects over 75 years of age in European countries and in the USA.^{9,18} Conversely, in Turkey, suicides are more common in women aged between 15 and 29 and in men aged between 25 and 49.¹⁹ According to data in our country, the most common age groups at risk of attempted suicide are 15–24 year olds and 25–34 year olds. Age group trends are similar in the case of completed suicides.^{20,21}

When the statistics were analyzed according to gender, it was reported that women attempt suicide more often than men do, but that completed suicide rates are higher in men.²¹ In a retrospective study carried out in emergency clinics, the most common method in the case of completed suicide was hanging (41%), followed by jumping from a height (21%).²²

Table 2

Shows methods of suicide.

Years	Hanging		FI		Intox		JFH		Total	
	n	%	n	%	n	%	n	%	n	%
2001	3	4.47	3	4.47	0	0	0	0	6	8.95
2002	1	1.49	3	4.47	0	0	0	0	4	5.97
2003	2	2.98	4	5.97	0	0	0	0	5	7.46
2004	2	2.98	1	1.49	0	0	0	0	4	5.97
2005	4	5.97	0	0.00	0	0	0	0	4	5.97
2006	4	5.97	2	2.98	1	1.49	1	1.49	8	11.94
2007	4	5.97	2	2.98	1	1.49	0	0	7	10.44
2008	2	2.98	2	2.98	1	1.49	1	1.49	6	8.95
2009	3	4.47	2	2.98	0	0	0	0	5	7.46
2010	2	2.98	3	4.47	0	0	0	0	5	7.46
2011	4	5.97	2	2.98	1	1.49	0	0	7	10.44
2012	3	4.47	3	4.47	0	0	0	0	6	8.95
Total	34	50.74	27	40.29	4	5.97	2	2.98	67	100.00%

FI: Firearm Injury, Intox: Intoxication, JFH: Jumping from high place.

Studies done in various provinces of Turkey including Adana (0–8 years of age), Sivas (13–19 years of age), Istanbul (11–20 years of age), and Istanbul (under 19 years of age), in addition to studies done by the Forensic Medicine Institute (15–19 years of age) revealed that female cases outnumbered male cases.^{2,23–28} In our study, 59.70% of the cases were female and 40.29% were male, indicating consistency with the results of other studies. In studies covering all age groups, it was reported that suicide was more common in men.^{2,12–15} However, in China, it was found that completed suicide rates were higher among women.¹⁶ In addition, in Turkey, completed suicide rates were found higher among women in two different studies 15–24 age groups.^{2,28} In this study women percentage were determined higher than men like in China and Istanbul. The reason for this can be connected the violence very high for women in the family and society in my country.

When methods of suicide were analyzed, it was detected that hanging was the most common method, followed by the use of firearms (see statistics above). In an Israeli study regarding all age groups and in two different studies by the Forensic Medicine Institute on suicide cases in the 15 to 19 age group and under 19 years of age, suicide using a firearm was found to be the most common method.^{2,12,23,28} However, studies done in Adana (0–18 years of age) and Sivas (13–19 years of age) revealed that hanging ranked in first place.^{24,25,27} The reason for this could be the easy availability of hanging material in that particular area, along with familiarity with hanging as a suicide method in that society.

Agritmis et al. found that the most common side of the fatal injury was head injury by firearm.²⁸

Table 1

Cases are showed according to years and gender.

Years	Female		Male		Total	
	n	%	n	%	n	%
2001	4	5.94	2	2.98	6	8.95
2002	3	4.47	1	1.49	4	5.97
2003	2	2.98	3	4.47	5	7.46
2004	2	2.98	2	2.98	4	5.97
2005	2	2.98	2	2.98	4	5.97
2006	5	7.46	3	22.1	8	11.94
2007	4	5.97	3	22.1	7	10.44
2008	4	5.97	2	22.1	6	8.95
2009	2	2.98	3	22.1	5	7.46
2010	3	4.47	2	22.1	5	7.46
2011	5	7.46	2	22.1	7	10.44
2012	4	5.97	2	22.1	6	8.95
Total	40	59.7	27	29.2	67	100.00%

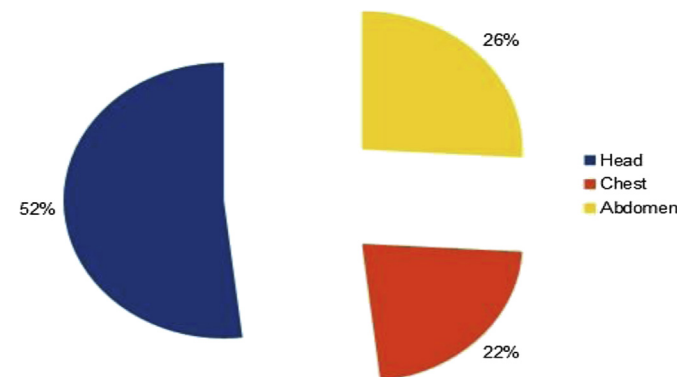


Fig. 1. Firearm injury sites.

In the case of suicides with a firearm, the most common site of the fatal injury was the head and neck area (20.89%), followed by the abdomen in 10.44% of the cases, and to a lesser degree, the chest area (8.95%). Deaths that occur as a result of firearm injuries must be investigated more carefully in regard to causation. Detailed studies should be done, such as examining the shot distance and gunshot residues.^{2,7} In addition, imaging such as computed tomography, magnetic resonance, and x-ray should be used. In the cases studied here, the shot distance was described as adjacent or nearly adjacent in all cases. The high prevalence of firearm suicide cases in our country can be attributed to the relatively easy availability of firearms in the home environment.

In the current study, it was found that two cases of intoxication were due to insecticides and two further cases were due to multiple drug use. These rates were higher in other countries.^{10–13,16} It is difficult to determine causation in the case of people jumping from heights, as such incidents may be confused with accidental falls.^{2,3,7} In addition, the possibility of homicide should always be kept in mind. In this study, one of two cases jumped off the terrace of a school in front of friends, while the other jumped out of a fourth-floor window following an argument with family.

The suicide note in completed suicides is a very important factor in understanding the psychosocial state of the person who died.²⁹ However, suicide notes are written by few suicide victims,³⁰ and were obtained in only seven cases in our series. Most of them had written that they were not paid enough attention by family and felt they had failed in life. A 17-year-old girl who died from a gunshot injury had “This was not a mistake” written on her left arm. And another a 19-year-old girl who died jumping from a height had “I love xxx” written on her left arm.

As it known, the problem is increasing in many countries. The suicide rate among adolescents and even children rises since last decade.^{10,31} In adults the suicide is most often a final result of long lasting depression while in adolescents it is often an impulse. Such as love problems, misluck or other not important a staff, which can be a triggering factor. Reducing risk factors should be the main target for effective prevention of youth suicide. it can be require preventive measurement according to the reason of underlying, which is depression, mood fluctuation, failure or other things. In treatment of youth depression, antidepressant and psychological treatment (warm talk, showing other possibilities in life) can be useful.¹⁰ In this way, act of suicide may prevent.

It is clear that the increase in suicide rates among youngster people is a significant issue in terms of public health. Social infrastructure supporting the prevention of suicide should be reinforced, and at the level of the family, positive relations should be established and maintained between family members. Schools, non-government organizations, and the media can also play a vital role in contributing to solving the problem of suicide.

Ethical approval

No application to the Council of Forensic Medicine was considered necessary, because the victims were not identifiable from the material evaluated, aside from their age and gender.

Funding

None declared.

Conflict of interest

The authors have no conflict of interest.

References

1. Durchein E. *Suicide, a study in sociology*. American Book-Knickerbocker Press, USA, New York, First Press; 1951. p. 44.
2. Yaylacı N, Çolak B, Ağrıtmış H, Yavuz İmre K. Adolescent suicide cases that are submitted to institute of forensic medicine. *Turk J Med Sci* 2004;**1**:18–24.
3. Odağ C. *Suicide (self inflicted) definition-theory-healing*. Izmir psychiatric Association Psychotherapy Unit; 1995.
4. Atalay İM, Eren İ, Gündoğar D. Suicide in Isparta province center, death thoughts prevalence and risk factors. *J Turk Psychiatry* 2012;**23**(2):89–98.
5. Chen CY, Yeh HH, Huang N, Lin YC. Socioeconomic and clinical characteristics associated with repeat suicide attempts among young people. *J Adolesc Health* 2013;**10**:1–8.
6. Tokdemir M, Kafadar M, Turkoglu A. Death of an inmate following multiple suicide attempts with razor blade: a case report. *Int J Forensic Sci Pathol* 2014;**2**(101):1–3.
7. Brownsky IW, Ireland M, Resnick MD. Adolescent suicide attempts. Risk and protectors. *Pediatrics* 2001;**107**(3):41–51.
8. Grossman DC, Reay DT, Baker SA. Self inflicted and unintentional firearm injuries among children and adolescents. *Arch Pediatr Adolesc Med* 1999;**153**(8):875.
9. World Health Organization. *Public health action for the prevention of suicide: a framework*. printed by the WHO Document Production Services. Geneva, Switzerland: World Health Organization; 2012.
10. Pelkonen M, Marttunen M. Child and adolescent suicide: epidemiology, risk factors, and approaches to prevention. *Pediatr Drugs* 2003;**5**(4):243–65.
11. Lubin G, Glasser S, Boyko V, Barell V. Epidemiology of suicide in Israel: a nationwide population study. *Soc Psychiatr Epidemiol* 2001;**36**:123–7.
12. Sayıl I, Devrimci Özgüven H. Suicide and suicide attempts in Ankara in 1998: result of the WHO/EURO. Multicentre Study of Suicidal Behaviour. *Crisis* 2002;**23**:11–6.
13. Çuhadaroglu F, Sonuvar B. A study on risk factors for adolescent suicide. *Turkish J Psychiatry* 1992;**3**:222–6.
14. Leconte D, Fomes P. Suicide among youth and young adults, 15 through 24 years of age. A report of 392 cases from Paris, 1989–1996. *J Forensic Sci* 1998;**43**(5):964–8.
15. Phillips RM, Liu H, Zhang Y. Suicide and social change in China. *Cult Med Psychiatry* 1999;**23**:25–50.
16. Jeffrey Bridge A, Goldstein Tina R, Brent David A. Adolescent suicide and suicidal behavior. *J Child Psychol Psychiatry* 2006;**47**(3/4):372–94.
17. Shain Benjamin N. Suicide and suicide attempts in adolescents. PhD, and the Committee on Adolescence. *Pediatrics* 2007;**120**:669–71.
18. Prasko J, Diveky T, Grambal A. Suicidal patients. *Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub* 2010;**154**(3):265–74.
19. TÜİK. *Suicide statistics*. Ankara: Turkey Statistical Institute; 2009.
20. Koçal N, Coşar B, Candansayar S. Inpatient psychiatric patients who attempted suicide and psychiatric disorders in the demographic characteristics of the retrospective investigation. *J Crisis* 1994;**2**(2):327–30.
21. Sayıl I, Berkun O, Palabıyıkoglu R. Attempted suicide in Ankara in 1995. *J Crisis Intervention Suicide Prev (Crisis)* 1998;**19**(1):47–8.
22. Pajonk FG, Gruenberg KA, Moecke H. Suicides and suicide attempts in emergency medicine. *Crisis* 2002;**23**(2):68–73.
23. Sonuvar B. Suicide and suicide attempts in youth, XXI. In: *Book of the National Congress of Psychiatry and Neurological Sciences*; 1985. p. 26–8.
24. Salaçin S, Çekin N, Gülmen NK, Özdemir MH, Şen F, Savran B. Death in Adana in childhood origin and distribution of causes of death. 1. In: *National forensic science Congress Poster Book of presentations, İstanbul*; 1998. p. 23–8.
25. Katkıcı U, Özkök MS, Özkara E. Evaluation of suicide cases in Sivas, 1. In: *Congress of forensic medicine books, Adana*; 1994. p. 115–8.
26. Tüzün B, Ozen Ş, Dokgöz H, Korur Fincancı Ş. Adolescence death. *Forensic Med Bull* 1997;**2**(2):67–70.
27. Arslan M, Akçan R, Hilal A, Batuk H, Çekin N. Suicide among children and adolescents: data from Cukurova, Turkey. *Child Psychiatry Hum Dev* 2007;**38**(4):271–7.
28. Ağrıtmış H, Yaci N, Çolak B, Aksoy E. Suicidal deaths in childhood and adolescence. *Forensic Sci Int* 2004;**142**:25–31.
29. Austin AE, Roger W. Case report; skin massages in suicide; an unusual occurrence. *J Forensic Leg Med* 2013;**20**:618–20.
30. Nor FM, Das S. Case report; planned complex suicide: self-strangulation and fall from height. *J Forensic Leg Med* 2011;**18**:336–9.
31. Byard RW, Markopoulos D, Prasad D, Eitzen D, James RA, Blackbourne BD, et al. Early adolescent suicide: a comparative study. *J Clin Forensic Med* 2000;**7**:6–9.